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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,326	02/22/2002	Joseph A. Abys	Abys 55-1-2-9	3838

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Glen E. Books, Esq.
Lowenstein Sandler
65 Livingston Avenue
Roseland, NJ 07068

EXAMINER

WONG, EDNA

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 06/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/081,326

Applicant(s)

ABYS ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-13 is/are rejected.
- 7) ☒ Claim(s) 6 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other:

Claim Objections

Claim 1 is objected to because of the following informalities:

Claim 1

line 1, the word "planting" should be amended to the word -- plating --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7

line 1, "the aromatic aldehyde" lacks antecedent basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims **1-2, 7-8 and 11-12** are rejected under 35 U.S.C. 102(e) as being anticipated by **Egli et al.** (US Patent Application Publication No. 2002/0153260).

Egli teaches an electroplating solution useable for plating tin solder coatings (page 3, ¶ [0033]; and page 5, ¶ [0058]) comprising:

- (a) a sulfonic acid electrolyte (page 3, ¶ [0036]);
- (b) a tin sulfonate salt (page 3, ¶ [0034]);
- (c) a non-ionic surfactant (= wetting agents) comprising an aromatic compound (= a carboxy aromatic compound) [page 5, ¶ [0054]];
- (d) a grain refiner comprising a heterocyclic compound (= picolinic acid) [page 5, ¶ [0054], esp., a wetting agent added to provide further grain refinement];
- (e) at least one brightening agent ([page 4, ¶ [0042]]) that is volatile at room temperature (*inherent*); and
- (f) at least one diol (= hydroquinone) [page 4, ¶ [0041]] for reducing the volatility of the bath (*inherent*).

The brightening agent comprises an aromatic aldehyde (= chlorobenzaldehyde) [[page 4, ¶ [0042]].

The aromatic aldehyde is chlorobenzaldehyde ([page 4, ¶ [0042]).

The sulfonic acid electrolyte is an alkane sulfonate ([page 3, ¶ [0036]).

The tin sulfonate salt is a tin sulfonate salt ([page 3, ¶ [0034]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claim **3** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Egli et al.** (US Patent Application Publication No. 2002/0153260) as applied to claims 1-2, 7-8 and 11-12 above, and further in view of **CN 1224083**.

Egli is as applied above and incorporated herein.

Egli does not teach wherein the aromatic compound is a polyalkoxylated alkyl phenol.

However, the CN reference teaches that polyoxyethylenated alkylphenol is a conventional surfactant in an electroplating bath of tin methanesulfonate (abstract).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the solution of Egli with wherein the aromatic compound is a polyalkoxylated alkyl phenol because polyalkoxylated alkyl phenol is a conventional surfactant in an electroplating bath of tin methanesulfonate as taught by the CN reference (abstract). It has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness

determination. See MPEP § 2144.06 and § 2144.07.

II. Claims **4-5 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Egli et al.** (US Patent Application Publication No. 2002/0153260) as applied to claims 1-2, 7-8 and 11-12 above.

Egli is as applied above and incorporated herein.

Egli does not teach wherein the aromatic compound is octylphenoxy (10) polyethoxy ethanol; wherein the heterocyclic compound is selected from the group consisting of substituted and unsubstituted lactones, cyclic imides and oxazollines; and wherein the brightening agent comprises carboxylic acid.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the solution of Egli with wherein the aromatic compound is octylphenoxy (10) polyethoxy ethanol because it appears that this compound is a conventional surfactant, Triton X-100, and it has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See MPEP § 2144.06 and § 2144.07.

As to wherein the heterocyclic compound is selected from the group consisting of

substituted and unsubstituted lactones, cyclic imides and oxazollines, Egli teaches that heteroaromatic groups that are suitable as the aryl groups include oxazolyl (page 4, ¶ [0044], esp., line 25). Although Egli teaches this compound as a brightener, it has been held that a newly discovered use or function of components does not necessarily mean the system is unobvious since this use or function may be inherent in the prior art. *Ex parte Pfeiffer* 135 USPQ 31.

As to wherein the brightening agent comprises carboxylic acid, Egli teaches that carboxy aromatic compounds are used as wetting agents (page 5, ¶ [0054]). Although Egli teaches this compound as a wetting agent, it has been held that a newly discovered use or function of components does not necessarily mean the system is unobvious since this use or function may be inherent in the prior art. *Ex parte Pfeiffer* 135 USPQ 31.

III. Claim **10** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Egli et al.** (US Patent Application Publication No. 2002/0153260) as applied to claims 4-5 and 9 above, and further in view of **Metzger et al.** (US Patent No. 5,021,130).

Egli is as applied above and incorporated herein.

Egli does not teach wherein the carboxylic acid is methacrylic acid.

However, Metzger teaches a tin electroplating solution comprising methacrylic acid (col. 1, lines 6-14; and col. 3, lines 25-29).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the solution of Egli with wherein the carboxylic acid is methacrylic acid because it is known to add methacrylic acid to a tin electroplating solution as taught by Metzger (col. 1, lines 6-14; and col. 3, lines 25-29). It appears that the methacrylic acid would have enhanced the brightness of the tin deposit.

IV. Claim **13** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Egli et al.** (US Patent Application Publication No. 2002/0153260).

Egli teaches a process for electroplating a substrate with tin (page 1, ¶ [0002]) comprising the steps of:

- (a) providing an electroplating solution comprising:
 - (i) a sulfonic acid electrolyte (page 3, ¶ [0036]);
 - (ii) a tin sulfonate salt (page 3, ¶ [0034]);
 - (iii) a non-ionic surfactant (= wetting agents) comprising an aromatic compound (= a carboxy aromatic compound) [page 5, ¶ [0054]];
 - (iv) a grain refiner comprising a heterocyclic compound (= picolinic acid)

[page 5, ¶ [0054]], esp., a wetting agent added to provide further grain refinement];

(v) a brightening agent consisting essentially of an aromatic aldehyde ([page 4, ¶ [0042]); and

(vi) a diol (= hydroquinone) [page 4, ¶ [0041]] for reducing the volatility of the bath (*inherent*).;

(b) positioning the substrate in the electroplating bath;

(c) applying current (page 6, Example 1); and

(d) maintaining the temperature of the electroplating solution at a sufficiently high temperature (page 5, ¶ [0057]) so that the substrate is electroplated with a bright solder coating (page 6, ¶ [0061]) having a carbon content (*inherent*).

Egli does not teach wherein the brightening agent consists of a carboxylic acid; and wherein the carbon content is less than about 0.1%.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Egli with wherein the brightening agent consists of a carboxylic acid because Egli teaches that carboxy aromatic compounds are used as wetting agents (page 5, ¶ [0054]). Although Egli teaches this compound as a wetting agent, it has been held that a newly discovered use

or function of components does not necessarily mean the system is unobvious since this use or function may be inherent in the prior art. *Ex parte Pfeiffer* 135 USPQ 31.

As to wherein the carbon content is less than about 0.1%, Egli appears to disclose a process at least in a similar manner as instantly claimed. There does not appear to be any method limitations set forth in the instant claims to distinguish the instant claims from the prior art. Therefore, it would have been within the skill of the art to expect that the solder coating electroplated by Egli has a carbon content of less than about 0.1%, unless proven otherwise.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claim 6 defines over the prior art of record because the prior art does not teach or suggest the electroplating solution of claim 1, wherein the heterocyclic compound is phenolphthalein.

Claim 14 defines over the prior art of record because the prior art does not teach or suggest the process of claim 13, wherein the diol comprises propanediol.

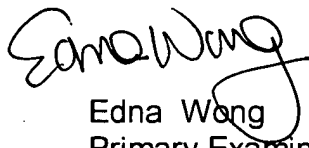
The prior art does not contain any language that teaches or suggests the above. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

Claims 6 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 873-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1495.


Edna Wong
Primary Examiner
Art Unit 1753

EW
June 6, 2003